REMARKS

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (US 5,520,269) in view of Uramoto et al. (US 4,642,011). Claim 6 is further rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. in view of Uramoto et al. and Hufnagl et al. (US 4,331,041). Claim 6 has been amended in order to overcome this rejection, and to point out and distinctly claim the subject matter to which the applicants regard as their invention.

Claim Rejections under 35 USC §103

Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. 5,520,269) in view of Uramoto et al. (U.S. 4,642,011). Further, Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. in view of Uramoto et al. and Hufnagl et al. (U.S. 4,331,041).

The present invention is a pin connection structure for a floating type brake disc. The pin connection structure of the present invention has the following characteristics. The pin is the completely hollow. A rounded circular convex shape is formed in part of an inner peripheral surface of an end portion of this hollow pin by beveling. An outer peripheral surface of the pin is not beveled, but in an angular shape as shown in FIGS. 4A, 4C, 4E, 4F and 4G of the present invention. The pin is surface-treated, and has a hard surface treated layer. There is a spring provided between the washer at the caulking side and the washer at the hub/disc side, and these washers are flat and

have no steps. In order to connect the hub and the disc, the pin end portion having the hard surface-treated layer is subjected to roller caulking and deformed. Deformation of the pin end portion after caulking is very small, and the inner diameter portion of the pin end portion is smaller than the outer diameter of the shaft portion. The angular outer peripheral surface of the pin end portion does not abut to the upper surface of the washer.

As the hollow pin in the present invention (in the claim 6 after the above-mentioned amendments) is caulked radially outward at the end portion, an arc surface is formed in advance in the end portion of the pin in at least a part of its inner periphery and the arc surface remains after caulking by a roller. By this feature, the oxide corrosion-resistant coating (the surface-treated layer) is not damaged by caulking of the inner periphery of the end portion by a roller and the oxide corrosion -resistant effects are maintained stably. That is, in the present invention, as an arc surface is formed in the inner periphery of the end portion of the hollow pin having on the surface thereof an oxide corrosion-resistant coating, when the end portion of the pin is expanded radially outward by caulking the end portion of the pin by a roller, damage is prevented from occurring on the oxide corrosion-resistant coating.

On the contrary, there is a portion which could look like an arc surface in the inner periphery of the end portion of the pin of each of Yamamoto et al. and Hufnagl et al. both before and after caulking. However, in both the cited references, the wall portion at one end of the pin is caulked radially outward and the arc surface in the inner peripheral of the end portion is not a portion which is caulked by means for caulking a pin. The arc surface in both the cited references has nothing to

do with caulking.

Therefore, Yamamoto et al. and Hufnagl et al. neither disclose nor suggest the feature of the present invention. Consequently, the present invention cannot be reached either by Yamamoto et al. in the light of Hufnagl et al. or furthermore in the light of Uramoto et al.

Therefore, claim 6 patentably distinguishes over the prior art relied upon by reciting,

> "A pin connection structure for use in a floating type brake disc assembly comprising: a hub; an annular disc which is concentrically disposed around said hub with a clearance therebetween, said hub and said disc having plural sets of semicircular connecting dents opening toward said clearance to thereby form respective inserting holes; a hollow pin having a shaft portion which does not have a step on an outer surface of an intermediate portion inserted into each of said inserting holes with a washer fitted on an end portion of said hollow pin which is subsequently caulked radially outward at the end portion by a roller for fixing said washer in position, an inner diameter portion of the end portion being only slightly expanded by caulking the hollow pin, and wherein the expansion does not exceed an outer diameter of a shank of the pin, wherein an outer peripheral surface of the hollow pin is not beveled but has an angular shape, a spring is provided between a washer at a chalking side of the hollow pin and a washer at a hub/disc side of the hollow pin, wherein said hollow pin is made of a metal having a surface-treated layer, and wherein an arc surface is formed in advance in the end portion of the pin in at least a part of its inner periphery to the extent that the end portion has no sharply bent edge on which the caulking pressure is applied, said arc surface remaining after caulking by a roller, wherein said metal is an aluminum alloy or a ferrous metal, wherein said surface-treated layer is an oxide corrosion-resistant film and one of chromium plating and nickel plating." (Emphasis Added)

Therefore, withdrawal of the rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. 5,520,269) in view of Uramoto et al. (U.S. 4,642,011) is respectfully requested. Further, withdrawal of the rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. in view of Uramoto et al. and Hufnagl et al. (U.S.

4,331,041) is respectfully requested.

Conclusion

In view of the aforementioned amendments and accompanying remarks, claim 6, as amended, is believed to be patentable and in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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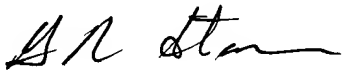

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